Principles of Surgical complex Exodontia

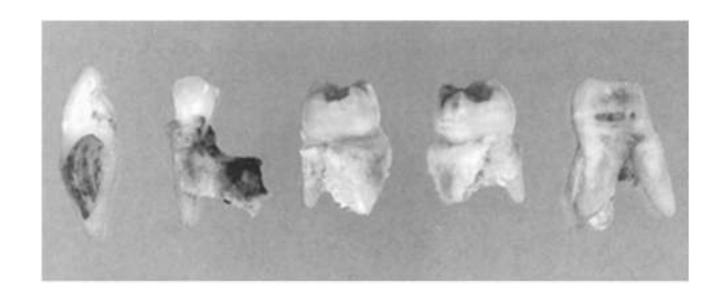
DR. SHERIF EID

B.D.5 M.52. PH.D.

LECTURER OF ORAL & MAXILLOFACIAL
SURGERY AT ACL

Complicated extractions primarily refer to retrieving tooth and roots that are likely to fracture or, for some other reason, have an obstacle to extraction. In these situations, surgical removal of bone or surgical sectioning of the tooth is required.

"The morbidity of fragments of bone that may be literally torn from the jaw by the closed technique greatly exceeds the morbidity of controlled surgical extraction."



Principles of Dentoalveolar Surgery

Case Assessment & Predictors of Difficulty

Access to the field of operation.

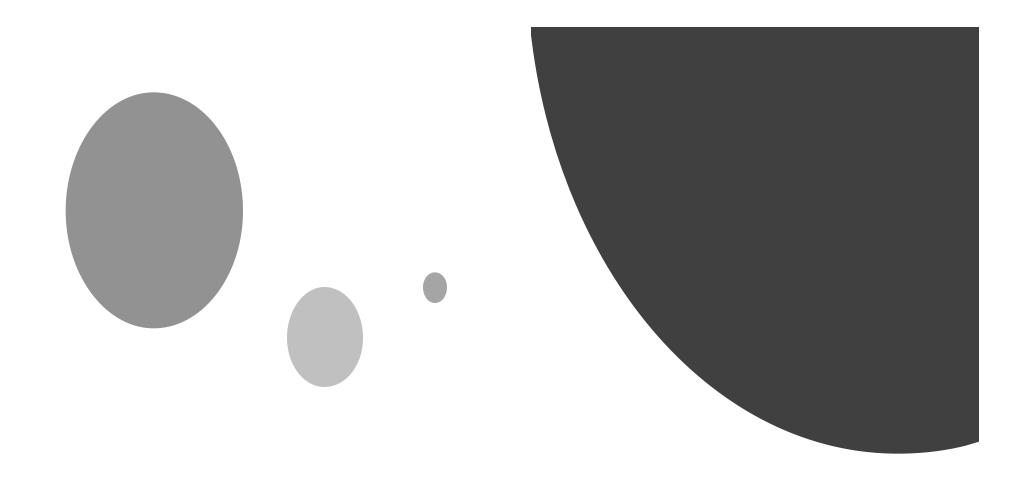
Reduction of resistance.

Removal of pathology or tooth structure.

Debridement of the field.

Wound closure.

Post-operative Care.



Case Assessment & Predictors of Difficulty

tooth that resist forceps extraction



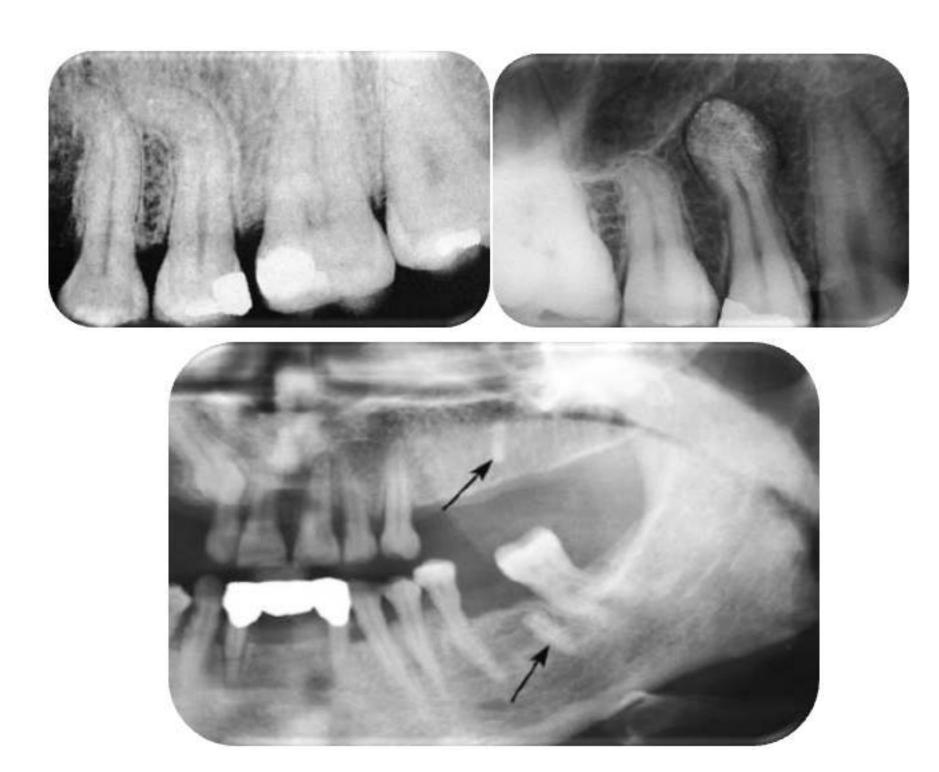
ot morphology

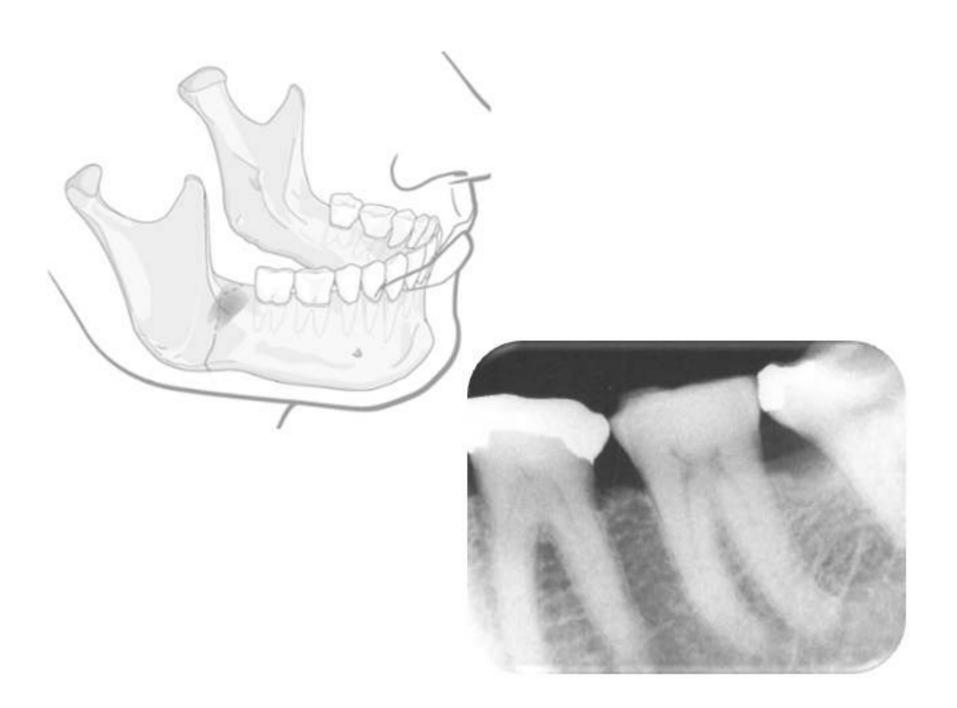


Older patients

 usually have denser, more highly calcified bone that is less likely to provide adequate expansion during luxation of the tooth.





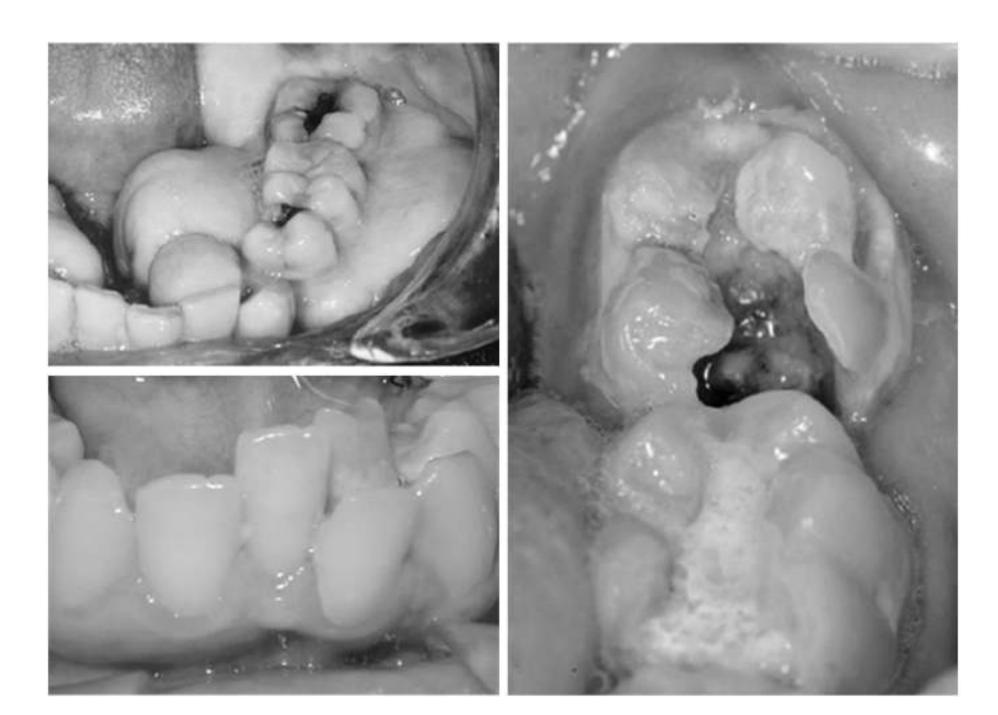


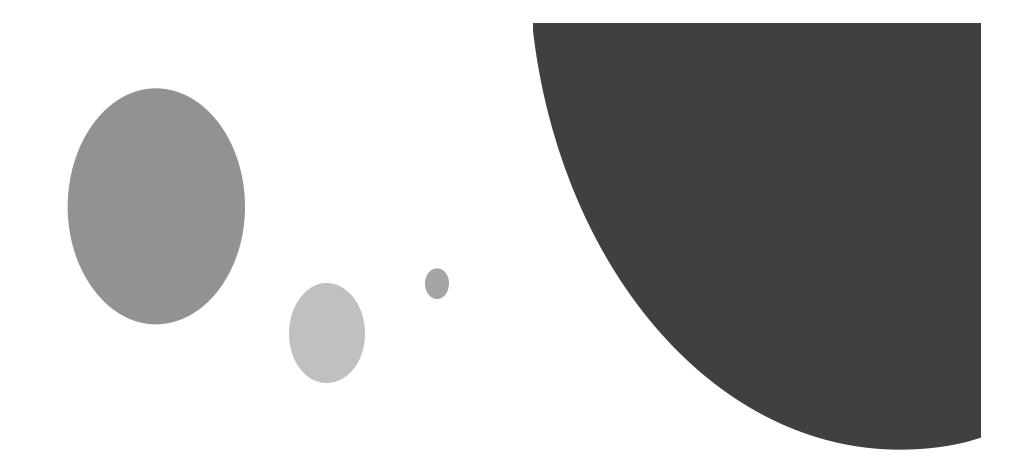






Fused roots





Access to the field of operation

Access to the field of operation

- I. Adequate light.
 - Continually reposition the source of light, modify your position to avoid obstructing the light, or use a headlight.
- II. Adequate access:
 - a) Ability to open the mouth widely.
 - b) A surgical field free of excess blood and other fluids.
 - c) Surgically created exposure.
 - d) Elevation & Retraction of tissues away from the operative field.

Light





Mouth props



Mouth gag

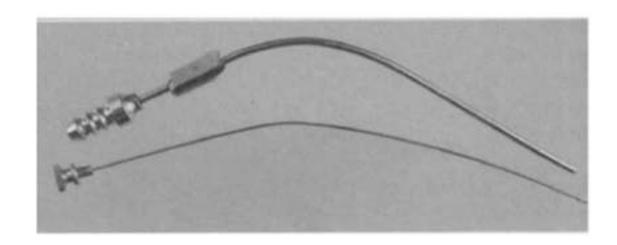
Surgical suction

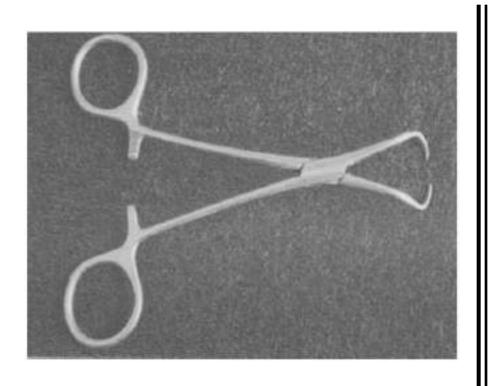
smaller orifice than usual rapid evacuation of fluids inside cavities

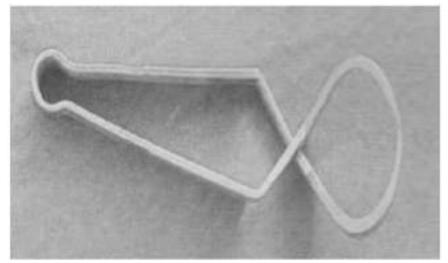


Fraser suction

- Hole in the handle
- Hard tissue cut; hole covered to remove the solution rapidly
- Soft tissue suctioned: hole uncovered to prevent injury







Towel clip

Set of instruments necessary for surgical tooth extraction

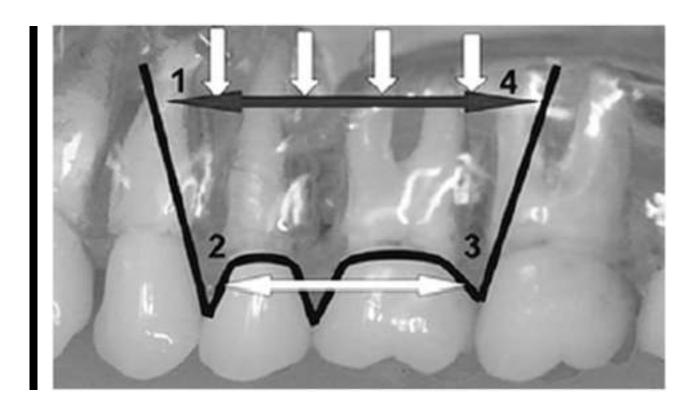


Surgically created exposure.

 The Flap is a section of soft tissue that is outlined by a surgical incision, carries its own blood supply, allows surgical access to underlying tissues, can be replaced in the original position to cover and protect the site of surgery and it can be maintained with sutures and expected to heal and promote good healing to underlying tissues.

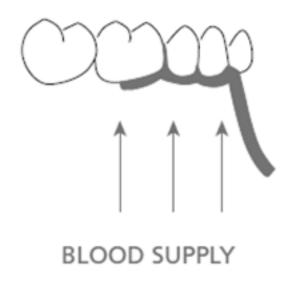
Design parameters of the soft tissue flaps

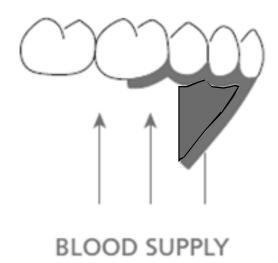
 The base of the flap must be broader than the free margins.



Design parameters of the soft tissue flaps

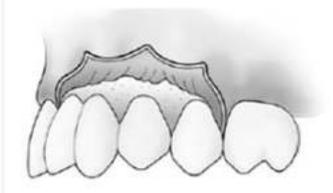
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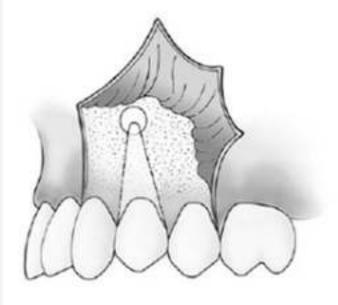




The flap must be of adequate size to allow:

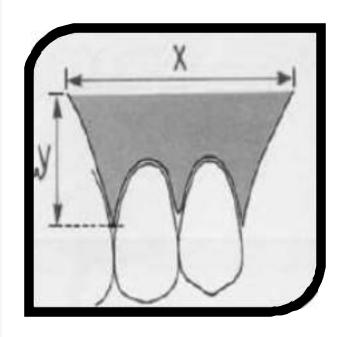
- Visualization of the surgical field
- Access for the insertion of required instruments.
- Flap to be held out of the operative field with a *retractor* that is *resting* on intact bone without tension.



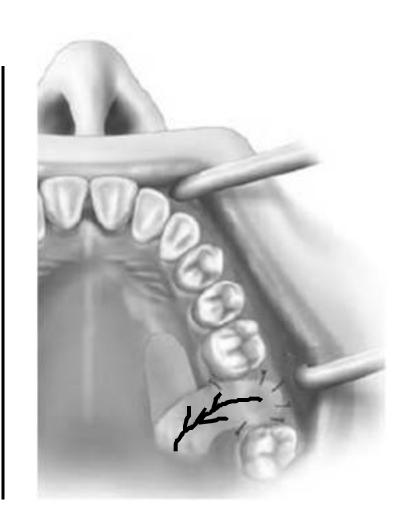


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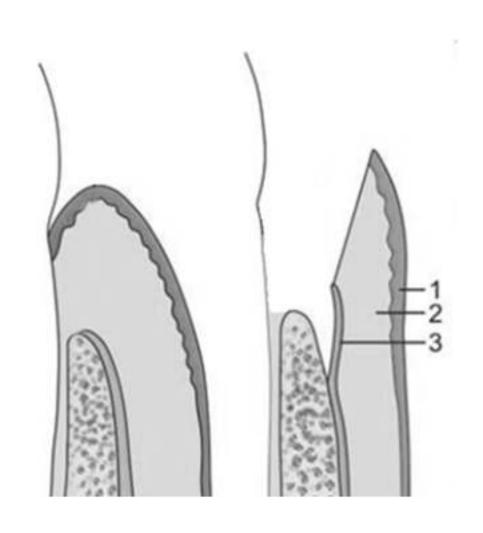
 The length of the flap should be no more than twice the width of the base (x=2y) (Except)

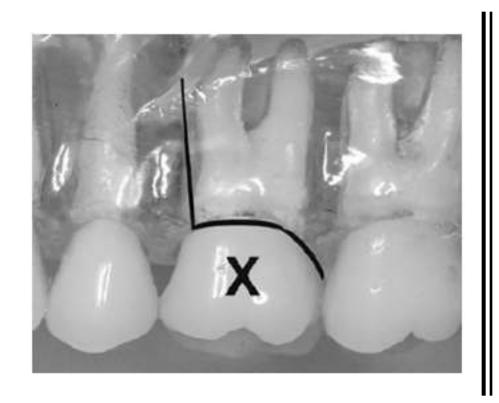


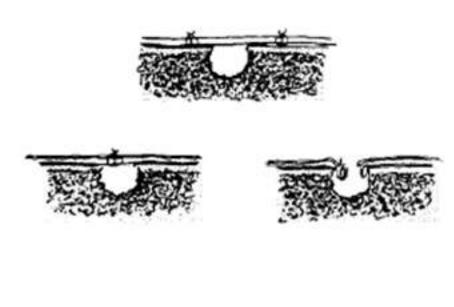
When possible an axial blood supply should be included



full-thickness mucoperiosteal flap

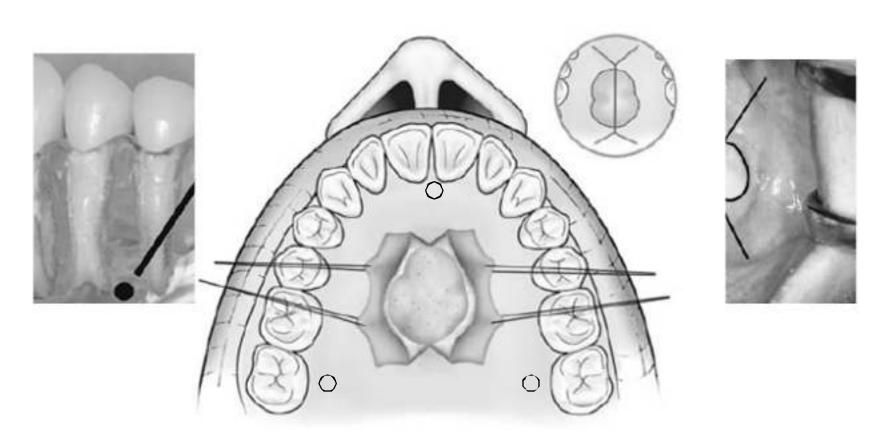






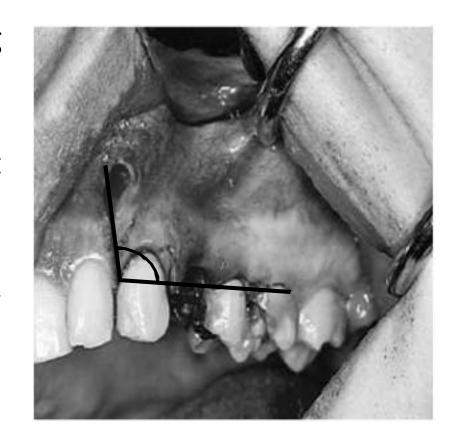
The incisions must be made over intact bone

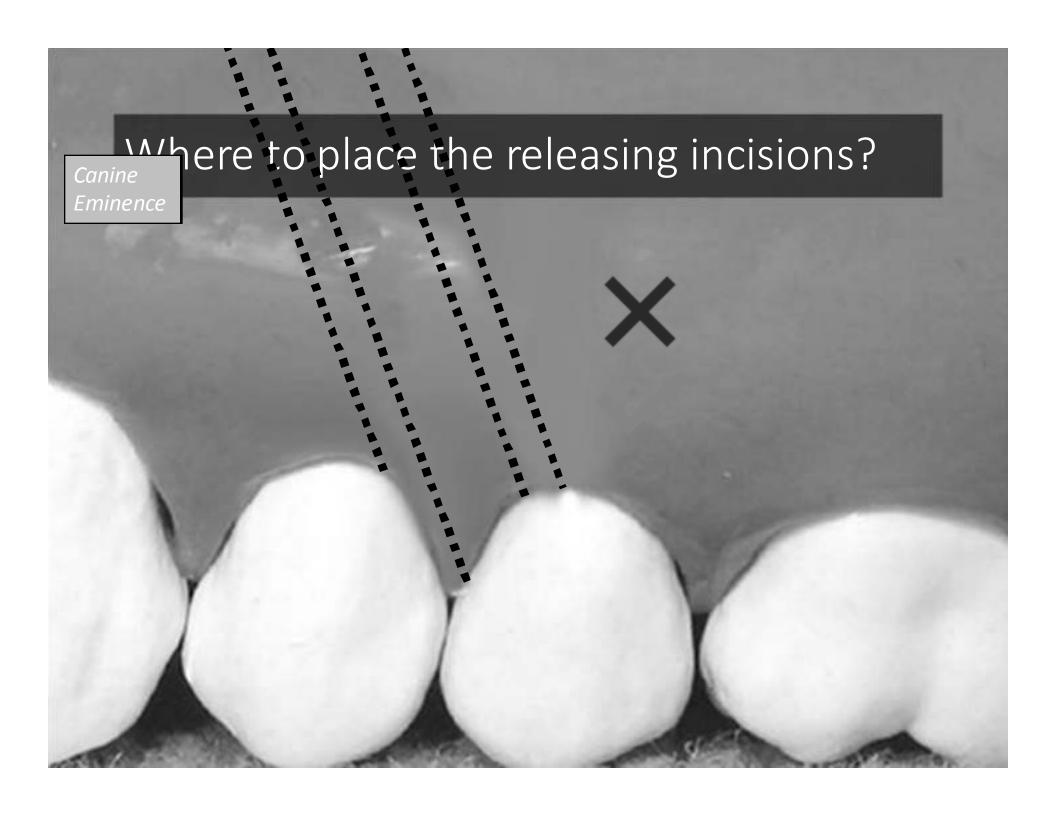
The flap should be designed to avoid injury to local vital structures in the field of surgery.

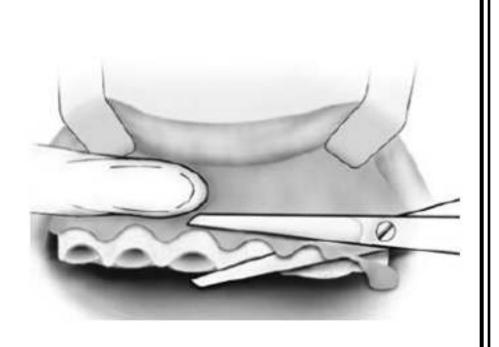


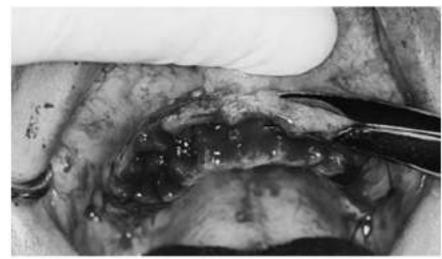
Releasing incisions should be used only when necessary and not routinely.

- When vertical releasing incision is necessary, usually a single one can be used at the anterior end.
- It should be oblique to allow the base to be broader than the free margin.





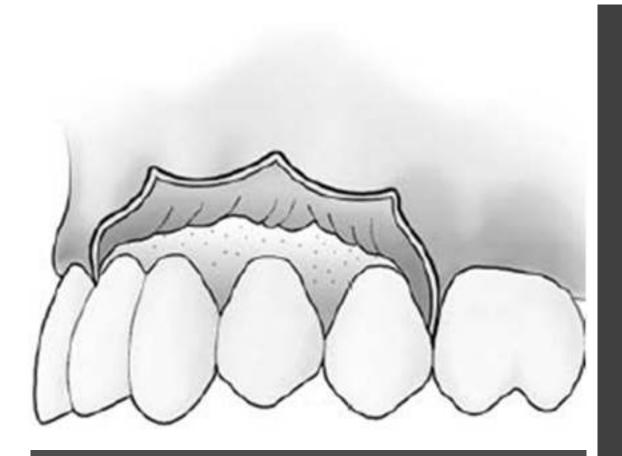




Flaps performed in edentulous ridges in the process of Alveoloplasty must be trimmed

Types of flaps

- Flaps may be described by:
 - Shape (envelope, pyramidal, semilunar)
 - location (buccal, palatal)
 - Tissues included (skin, mucosal, mucoperiosteal)
 - Number of incision lines (one, 2 lines, 3 lines)
 - Number of corners (3 corners, 4 corners)



The Envelope Flap

Indication: to

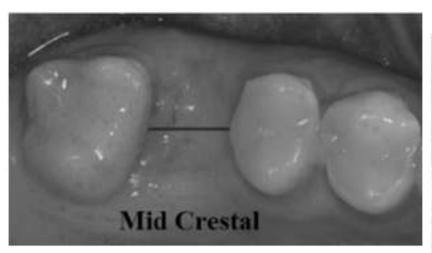
· Expresel Ishthisw incisioncismade Aecks of several teeth and spreading the इिकास कि अविश्वार कि का the espending ridge.

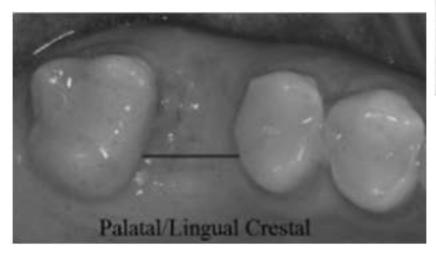
The Envelope Flap

- The gingiva around the necks of teeth must be sharply incised before retraction.
- The gingival incision must extend for adequate distance mesiodistally in order to allow retraction without much tension



Crestal incision







The Envelope Flap

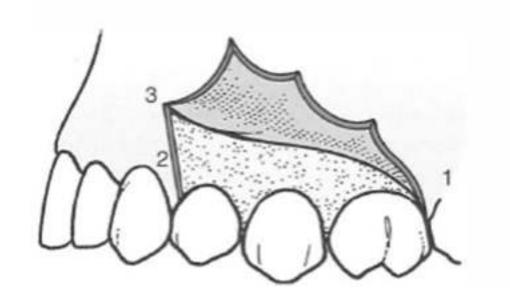
Advantages:

- 1. Less bleeding.
- 2. Minimum
 disturbance to the
 periosteum which
 minimizes the
 postoperative pain,
 edema.
- 3. Better faster healing.

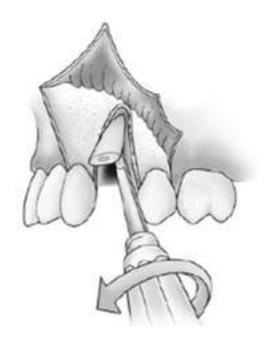
Disadvantages:

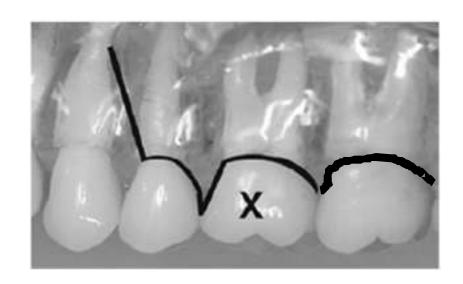
- 1. Should extend for long distance mesiodistally to allow retraction without tension.
- 2. Disturbance of the gingival attachment

Triangular flap

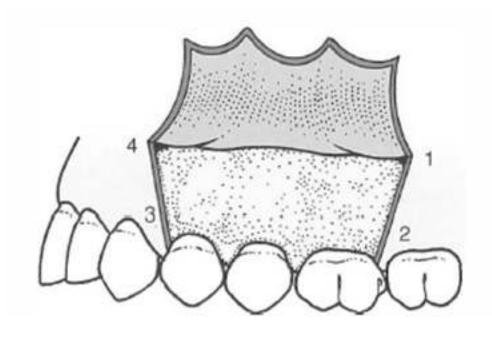


- 2 incision lines flap: One oblique incision with the gingival incision that provides for greater access with a shorter envelope incision.
- Indications: for removal of small teeth or small root fragment.



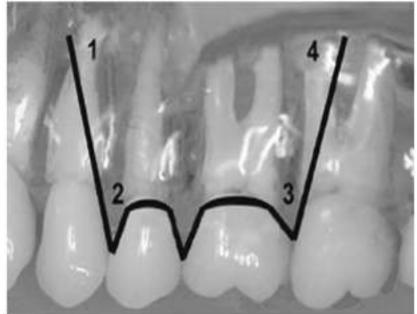


Rectangular flap (or Trapezioidale)



- 3 incision lines flap: two oblique incisions with the gingival incision.
- Indications: for exposure of a large area such as removal of molars or impacted teeth, cysts or tumors.





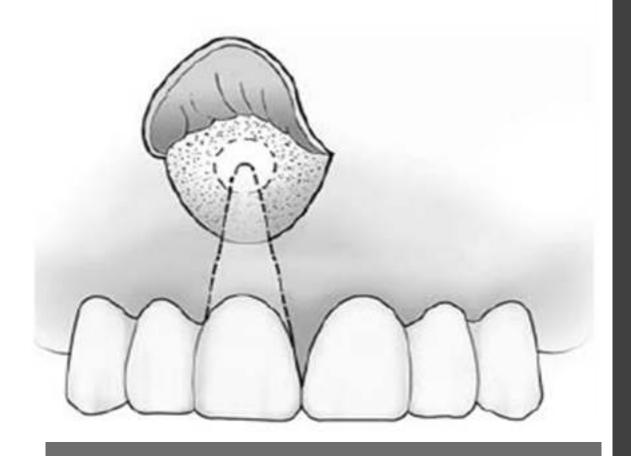
Pyramidal Flaps

Advantages:

- Great exposure of the field.
- Allows discovery of any destroyed bone in the area.
- Allows resting of the edges on sound bone during closure.

Disadvantages:

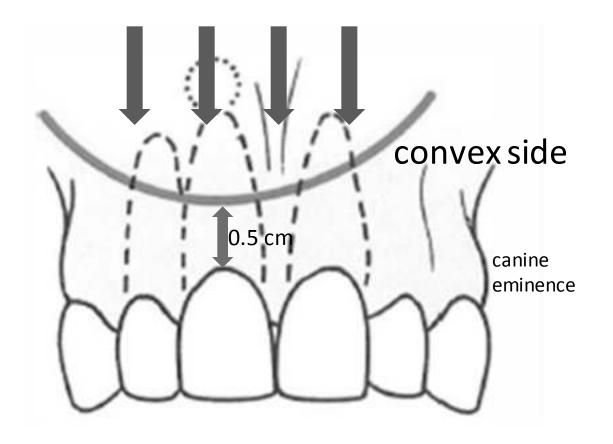
- Disturbance of large areas of periosteum causing postoperative pain and edema.
- The vertical component is difficult to close and may cause prolonged healing.
- Disturbance of the gingival attachment.



Semilunar flaps

- Indications:
- 1. apicoectomy.
- 2. In removal of small root apex away from the gingival margin.

Requisites:



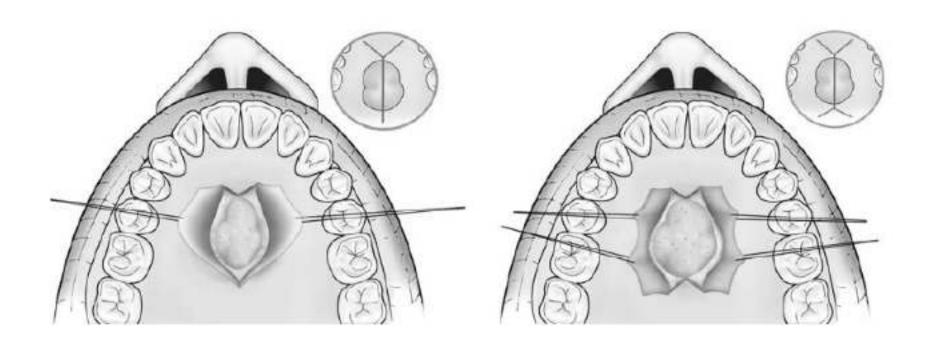
>Advantages:

- Avoids disturbance of the gingival attachment or trauma to the papillae.
- ➤ Disadvantages:
- Limited access.
- Doesn't allow discovery of any destructed bone that may exist beyond the incision line of the flap.



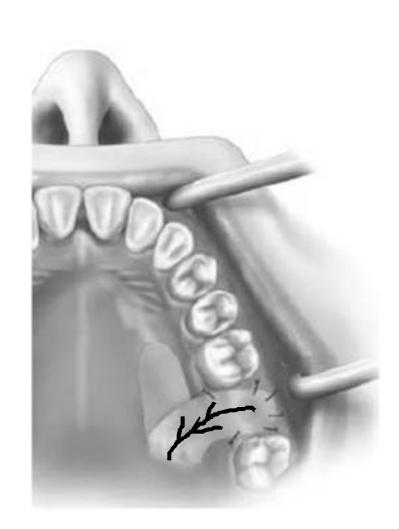
Palatal Flaps:

The Y-incision



Palatal Flaps:

The pedicle flap

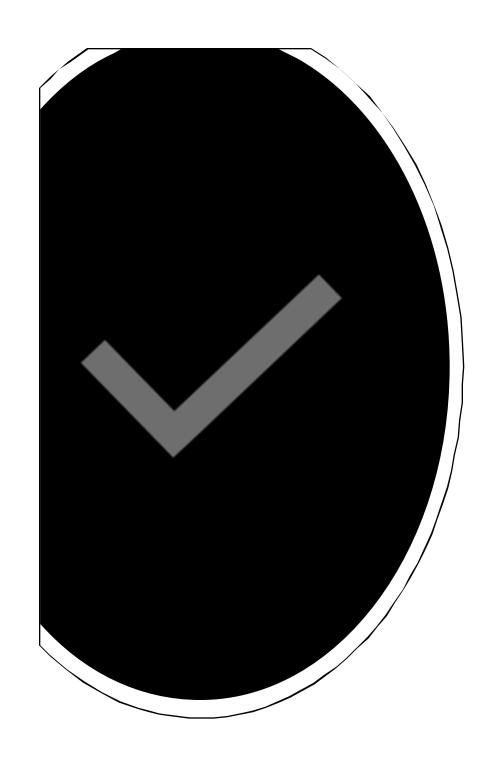


Palatal Flaps:

Gingival flap

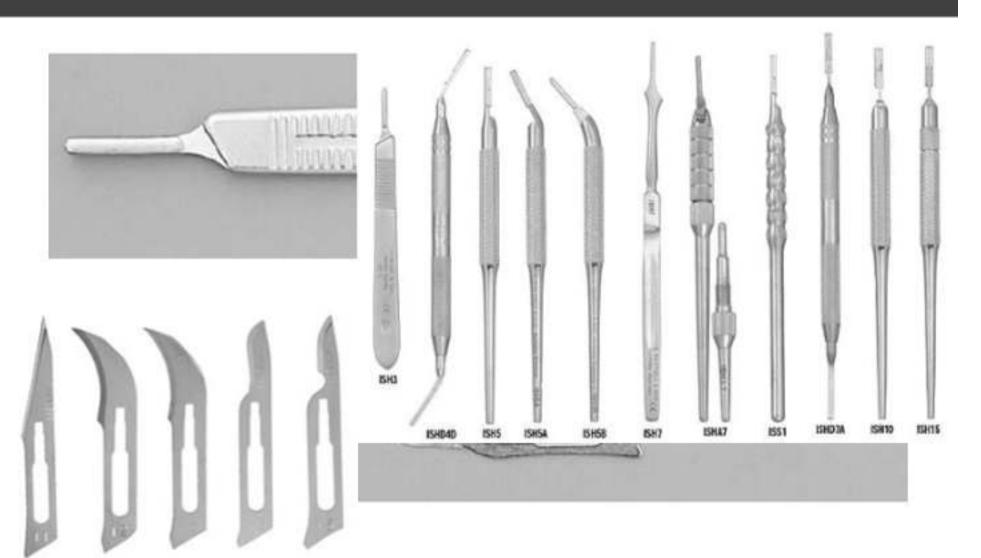






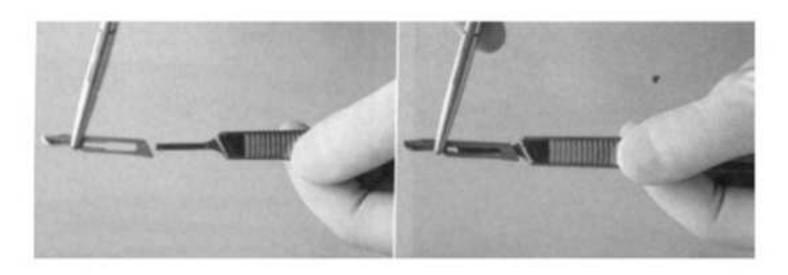
HOW TO
PERFORM
YOUR
INCISION?

Blades & Handles

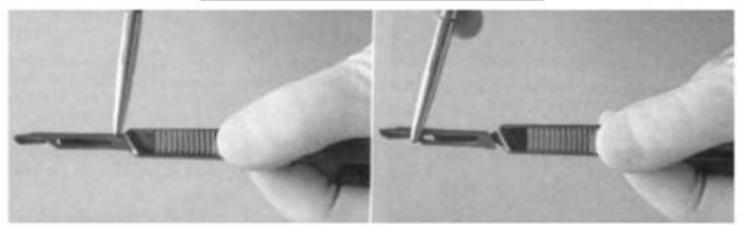




Blade loaded

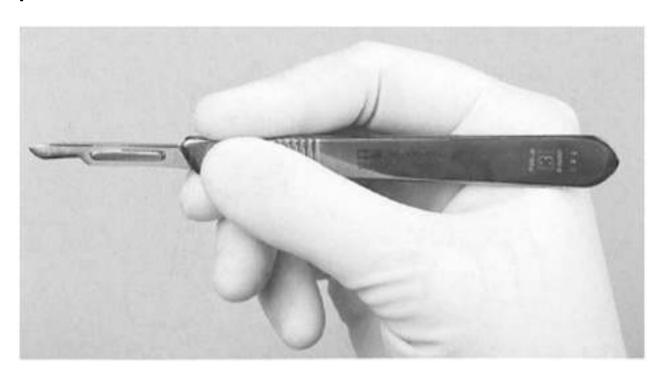


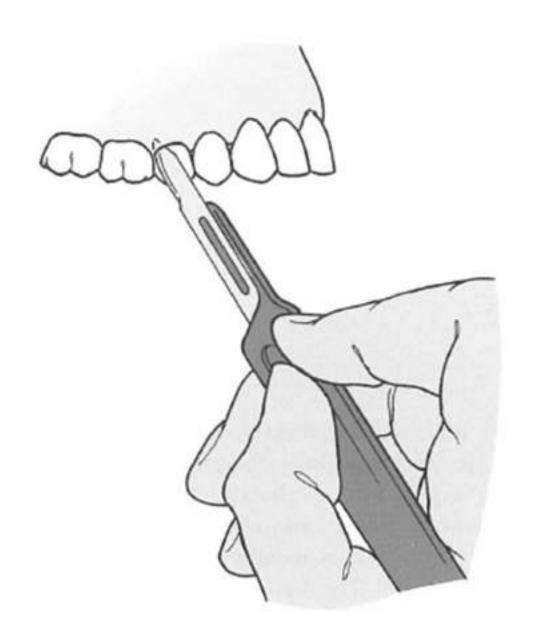
Blade removed



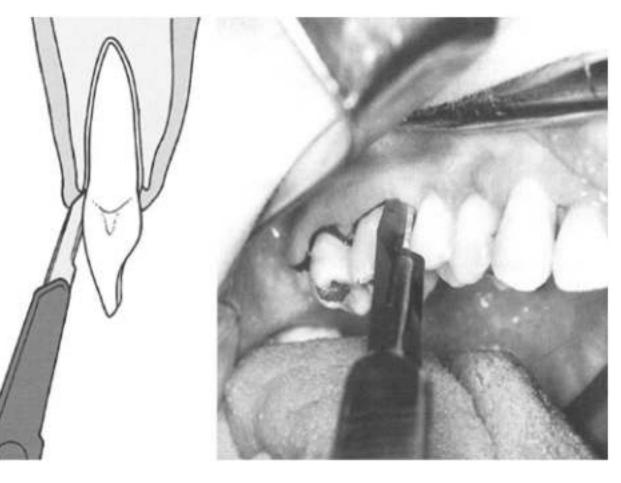
Pen grasp

• The incision is made with one firm, slow stroke of a sharp blade

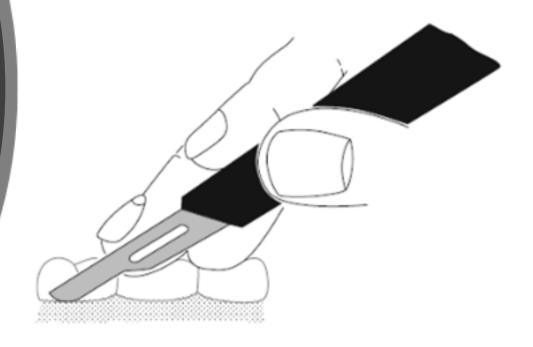




For the gingival incision the blade is held in a slight angle to the teeth and the incision is done from posterior to anterior.



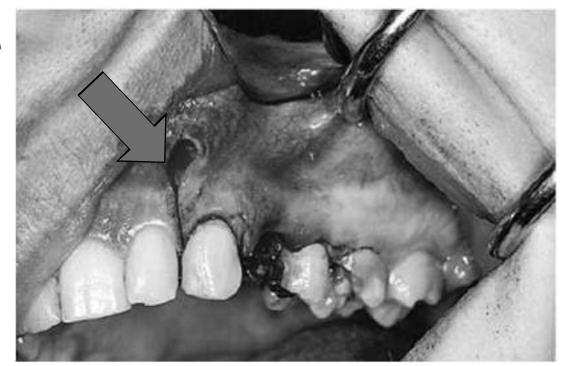
- A sharp blade of proper size should be used.
- Dull blades: no clean sharp incisions
- Firm
 continuous
 stroke should
 be used when
 incising.

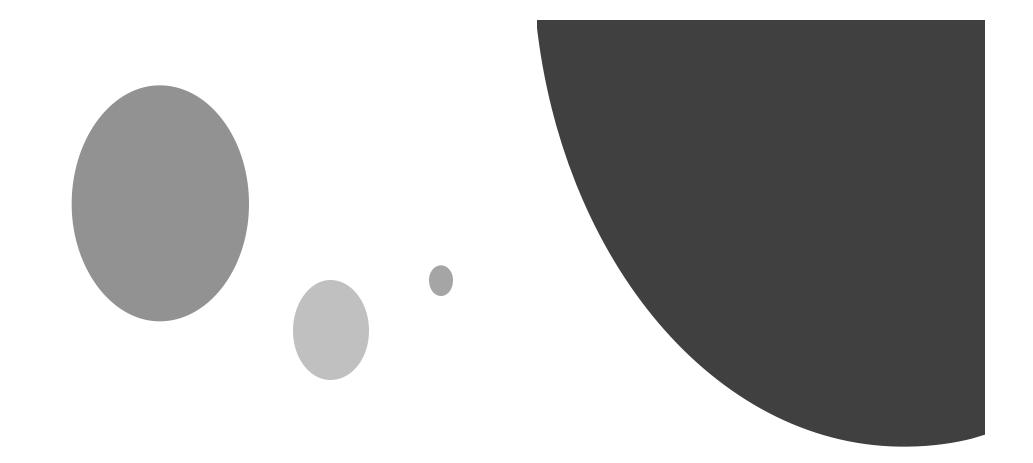


• The incisions should be made with the blade held perpendicular to the epithelial surface.



 For the releasing incision the tissue should be reflected apically with the opposite hand tensing the alveolar mucosa so that the incision is made cleanly through it.

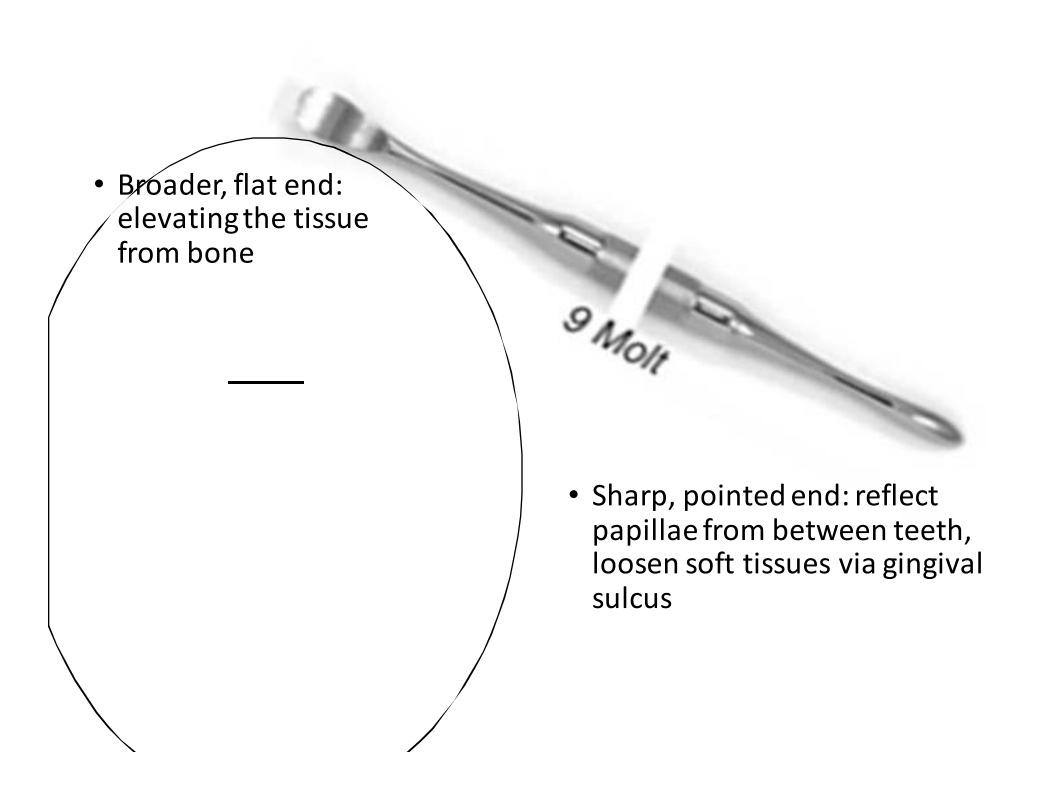




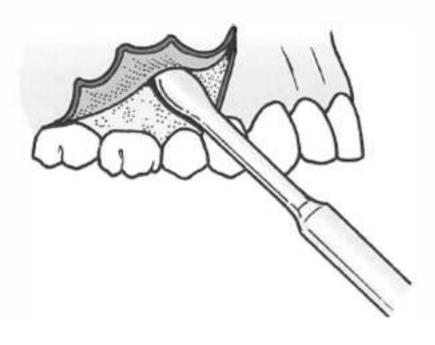
Flap elevation and Retraction

Woodson or No.9 Molt elevators





- Mucosa &
 Periosteum
 reflected in single
 layer =
 mucoperiosteal flap
- Elevation begins at the papilla.



Reflection of soft tissue- 3 methods

- 1. Prying motion: pointed end to elevate soft tissue
- 2. Push stroke: broad end slid under the flap separates mucoperiosteum from bone
- 3. Pull/ Scrape: tends to shred periosteum, if not careful

Retraction of tissues

For the oblique incisions, the broad end of the elevator is inserted at the middle corner of the flap and the dissection is carried out with a pushing stroke, posteriorly and apically.



- Once the flap has been reflected, the elevator can be used as a retractor to hold the flap in proper position.
- It should be held perpendicular to the bone and resting on sound bone and should not be trapping soft tissue.





Minnesota retractor

Austin





Selden retractors

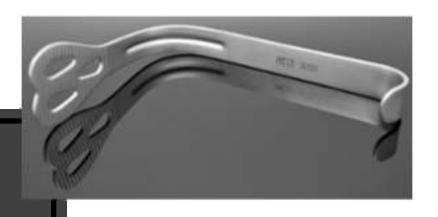
- Before flap- retractor held loosely in the cheek
- After flap reflection- retractor placed on the bone & used to retract the flap





Weider Retractor

- Broad, heart-shaped
- Serrated on one side: firmly engage tongue, retract it medially
- Don't position posteriorly -- gagging





Principles of Surgical complex Exodontia

VOLUME !!

Principles of Dentoalveolar Surgery

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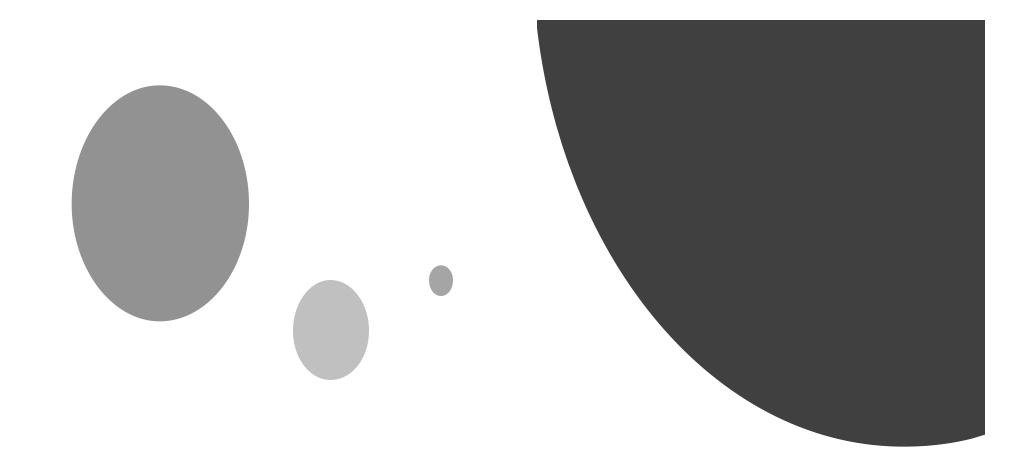
Reduction of resistance.

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Debridement of the field.

Wound closure.

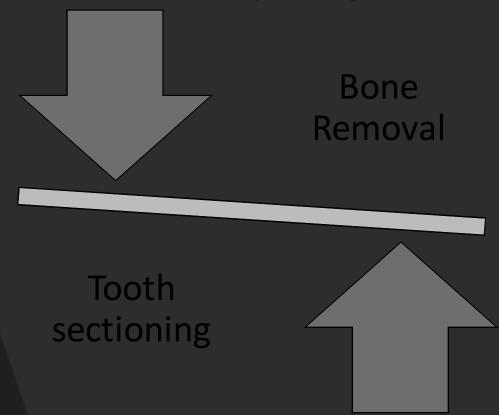
Post-operative Care.



Reduction of resistance

Reduction of resistance

• Reduction of the resistance around the tooth structure in order to allow its removal by means of forceps or elevators using the least amount of manipulating force.



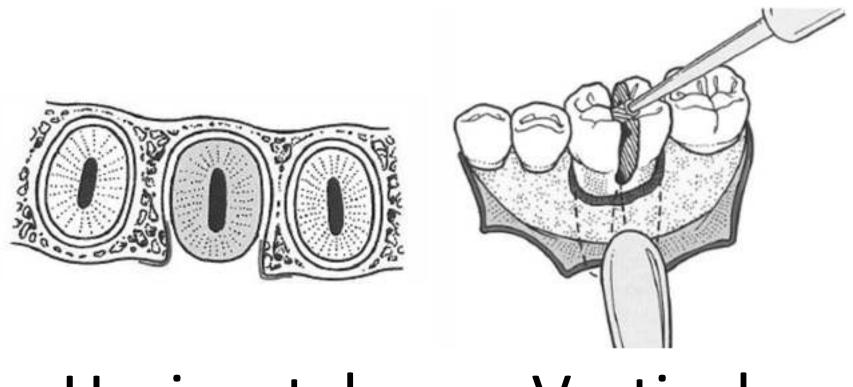
(A.. Bone Removal

- Gaining access to the tooth structure.
- Reduction of the resistance around the tooth.
- Provides a point of application of forceps or elevators.
- Provides a space into which the tooth may be displaced by manipulation.





You should always be conservative and remove the only necessary amount of bone, in order to decrease post operative pain and edema.



Horizontal

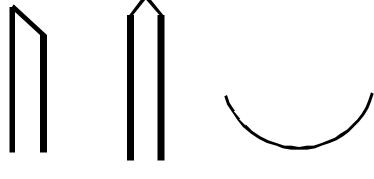
Vertical

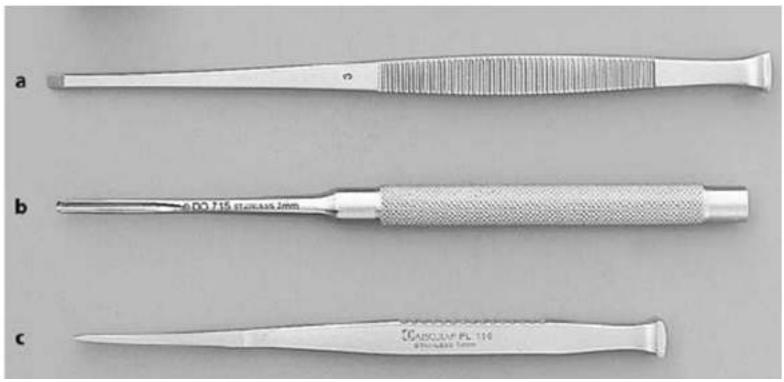


Instruments for bone removal

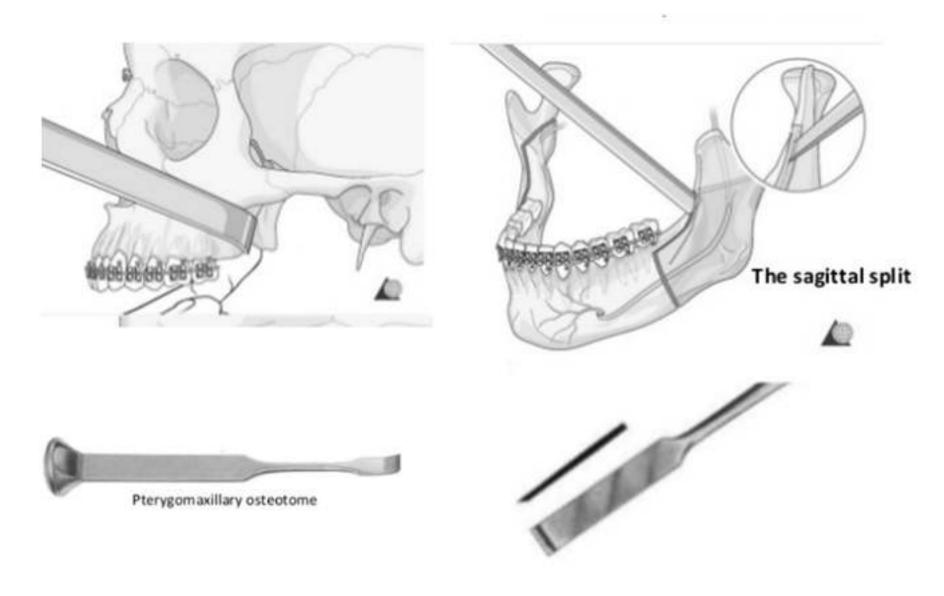
Blade shape:

- 1. Unibevel
- 2. Bibevel (osteotome)
- 3. Grooved





Straight or curved:



Methods of application:

1. Hand chisel (gauge)

2. Mallet Driven (hammer)

3. Electric Pneumatic driven chisels

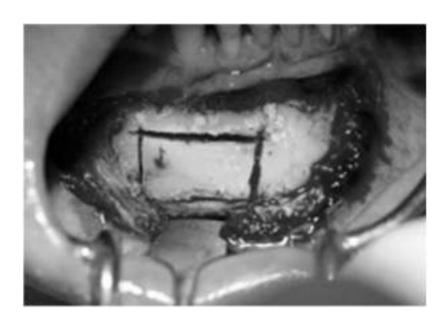
Tapped: 'pull-back' action- force from wrist

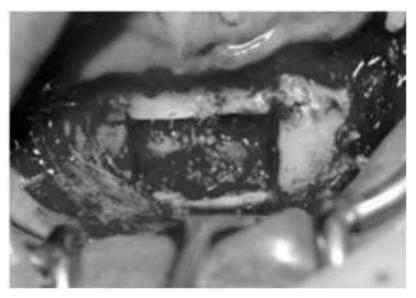


Mallet

Advantages:

- Clean and smooth cut.
- No heat generation.
- Variable patterns,
 thicknesses, widths and
 sizes of chisel blades
 and handles





Disadvantages:

- annoying and terrifying
- Needs great skill and training.
- Less accurate
- Contraindicated to be used in the maxilla
- Not practical for removal of dense bone.



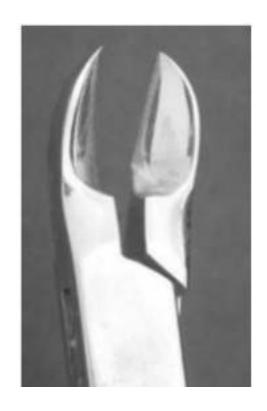
Rongeur forceps

- bone cutting forceps has sharp blades that are squeezed together by the handles cutting through the bone.
- Leaf spring between the handle: instrument opens when hand pressure is released. Repeated cuts without manually reopening



Types:

- Side-cutting
- Side-cutting & end-cutting





Surgical burs and Handpiece

- Different sizes and shapes of burs are available.
- The round burs are used to drill holes in the bone. Then these holes are connected by the Fissure bur.





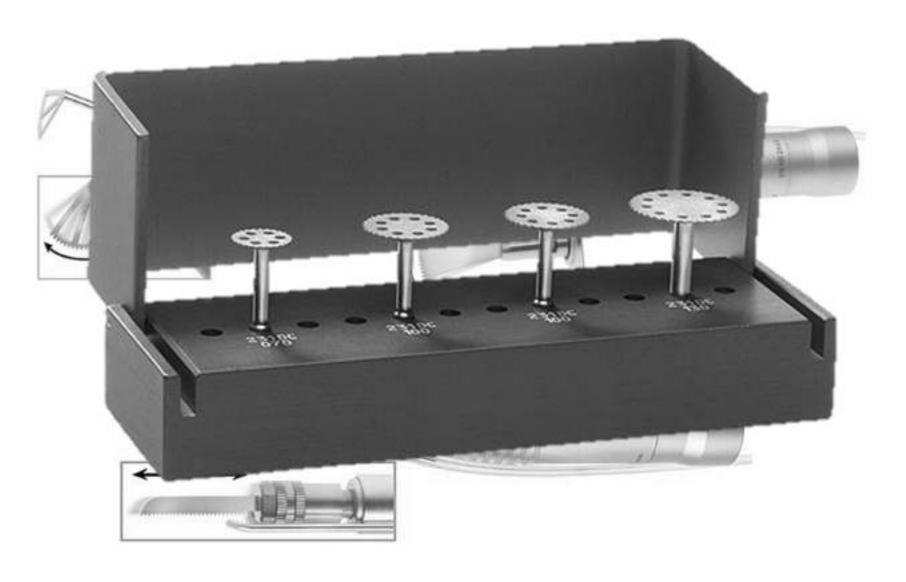
Must not exhaust air into the operative field

Advantages

- Easy to use and control.
- Practical in removal of dense bone.
- Safer to remove bone in maxilla.
- Accurate bone removal.
- Not frightening to the patients.

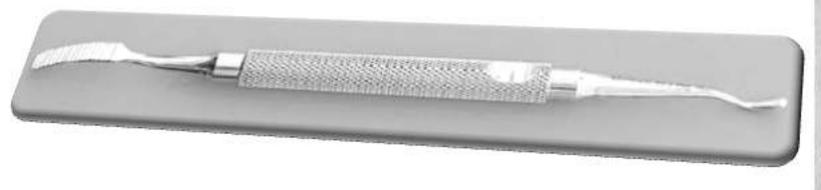
- Heat generation
- rough edges of bone
 Disadvantages

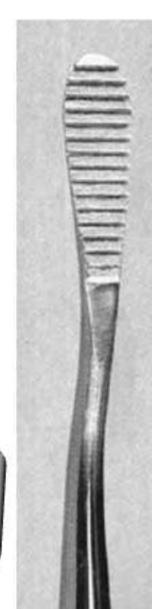
Bone saw



BONE FILES

- Final smoothing of bone before suturing of mucoperiosteal flap
- Double-ended: small & large
- remove bone on pull stroke only.





Trephine Drills





Piezo-surgery

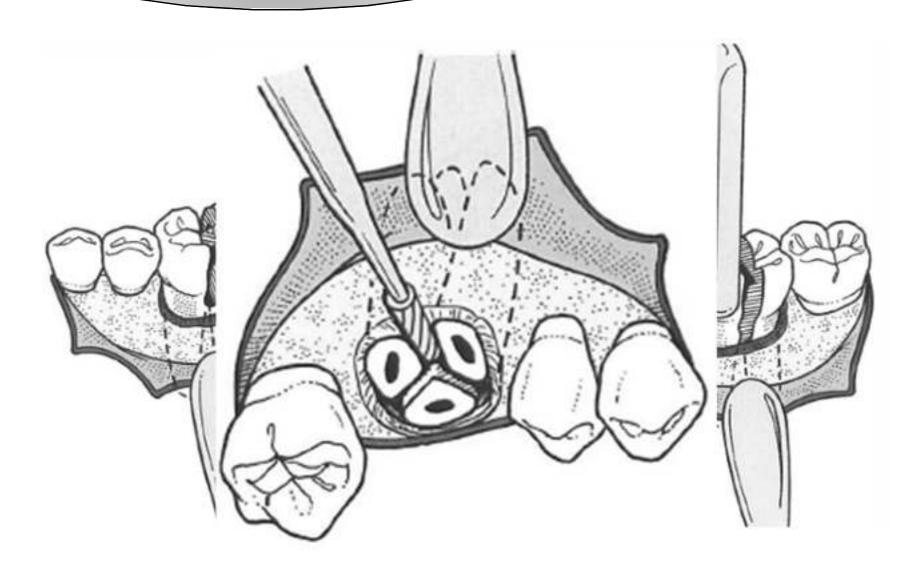


Laser assisted extraction

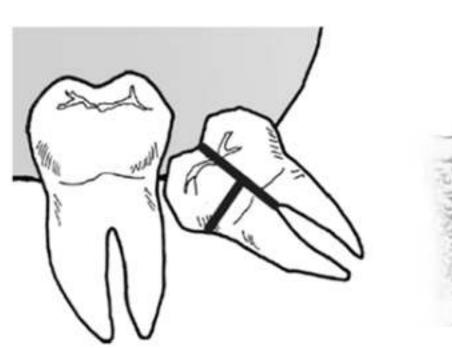


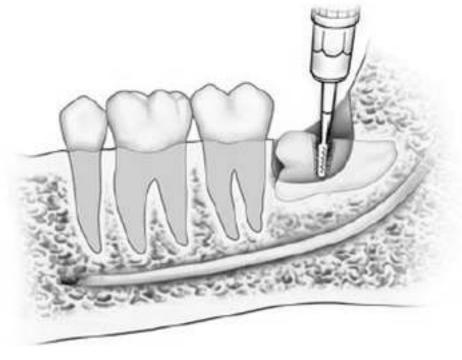
B.. Tooth division

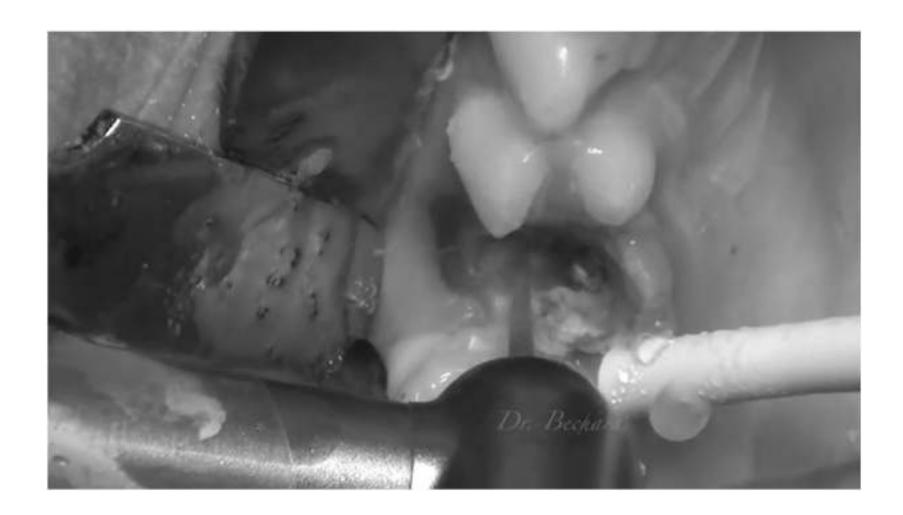
" divide and conquer"

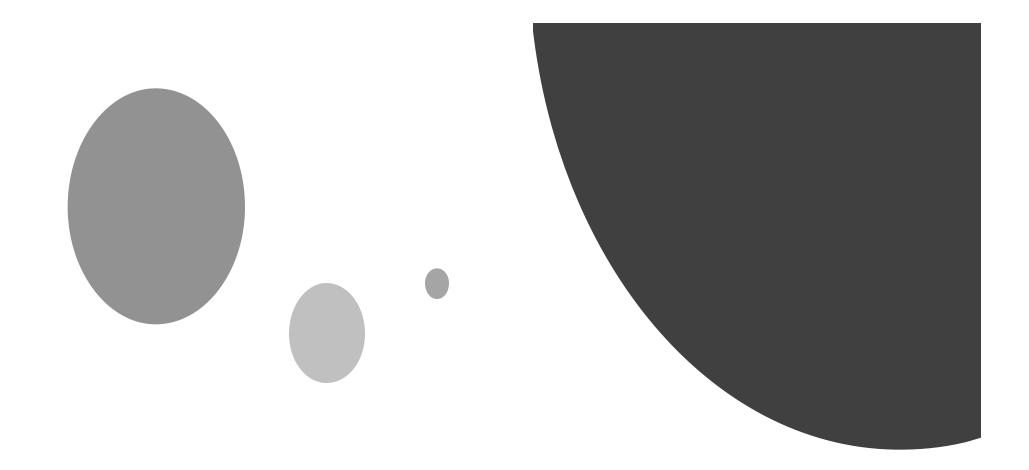


B.. Tooth division





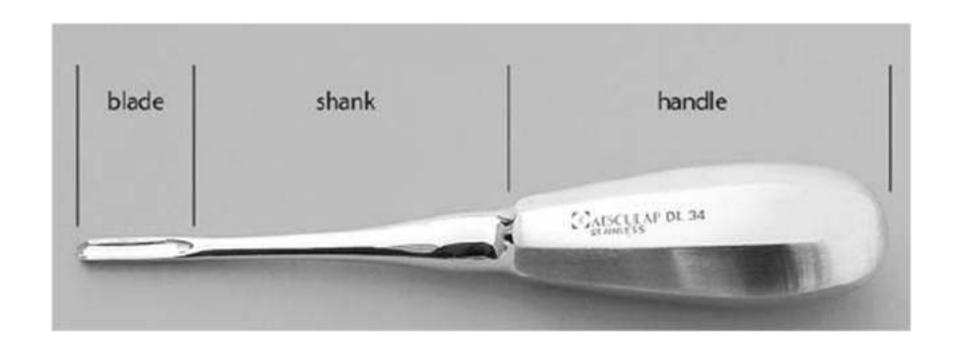




Removal of tooth structure.



Instruments used in luxation &/Or removal of teeth or tooth fragments, which cannot be grasped by the blades of the forceps



Parts of elevators

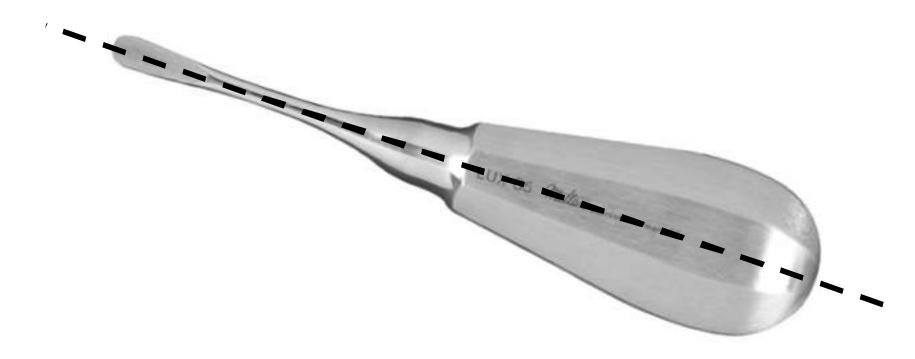


Classifications

According to the form According to the blade shape

According to use

According to Form



Straight elevators

According to Form

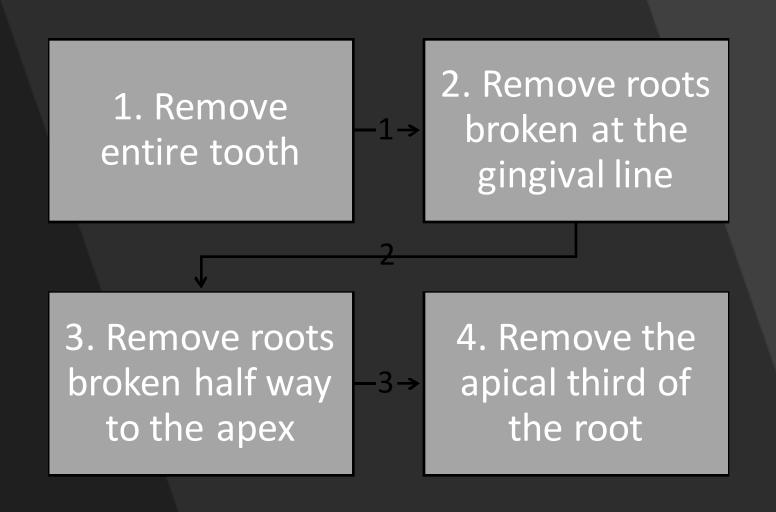


Curved elevators

According to Form

Cross bar elevators

Classification according to use

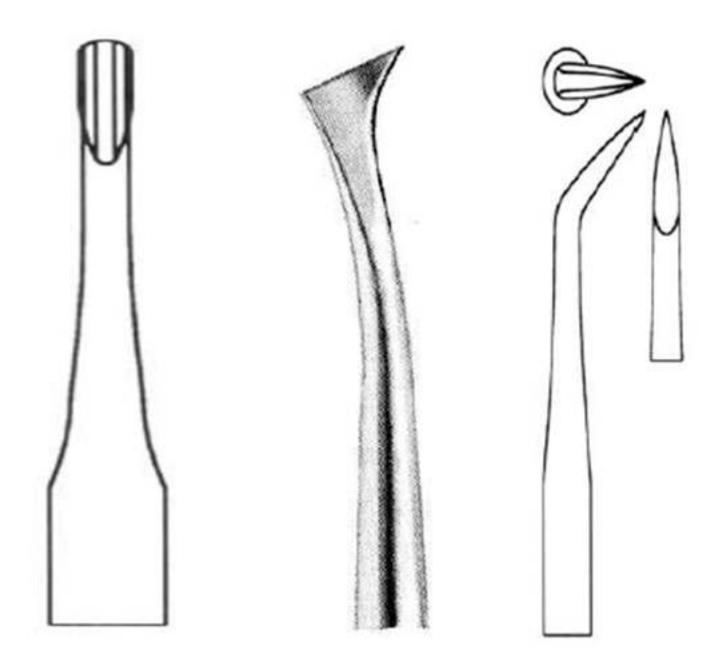


According to the blade shape

1.The straight elevators

2.The triangle elevators

3.The Pick type elevators

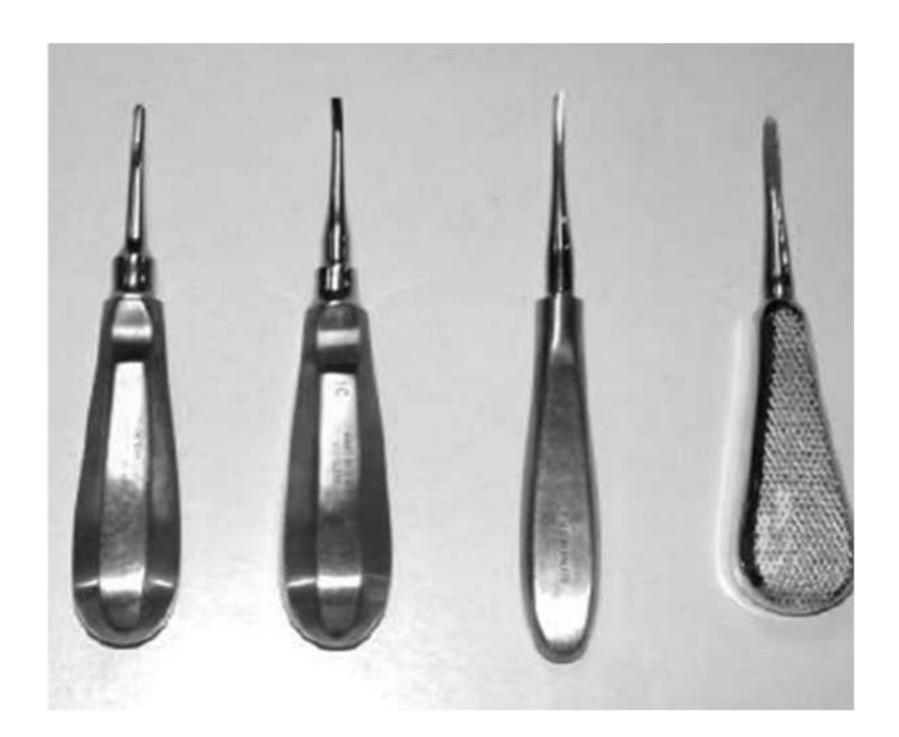


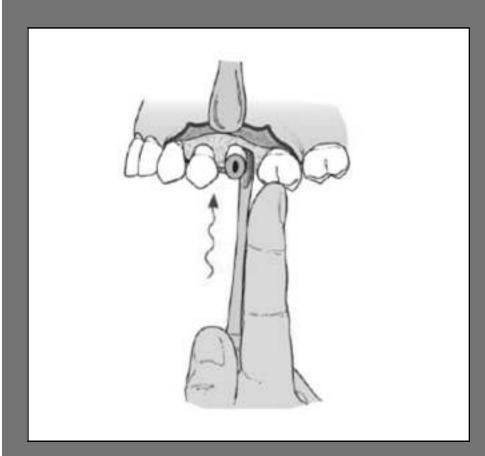
1. Straight Elevators

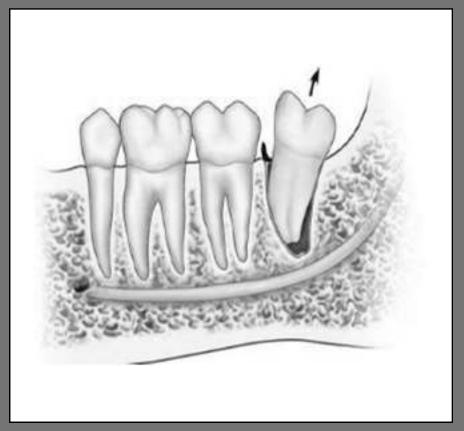
- Usually used for luxation of teeth before extraction or roots from their sockets.
- Application: Mesial application of force/wedging.











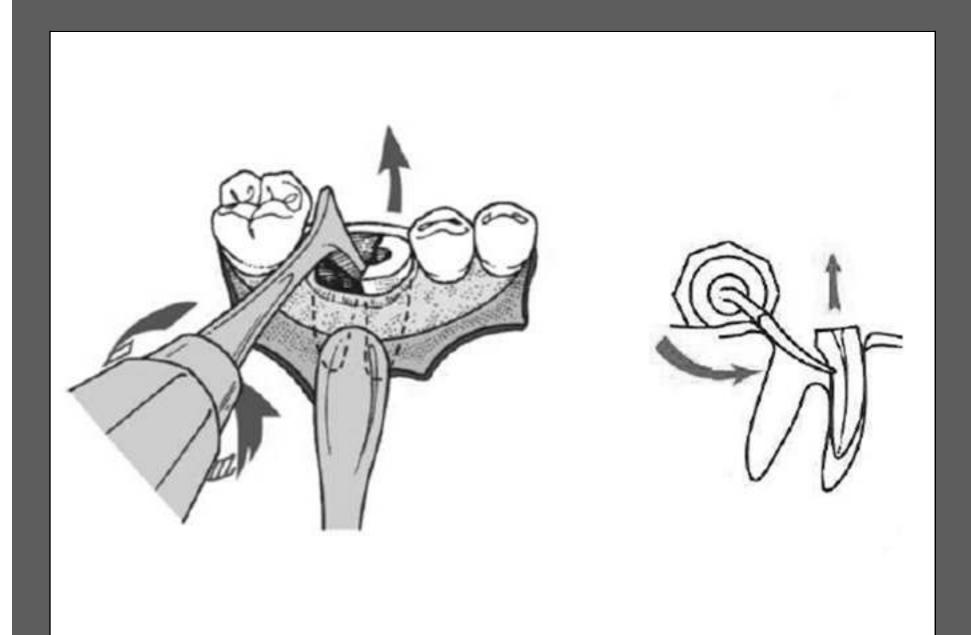
Application



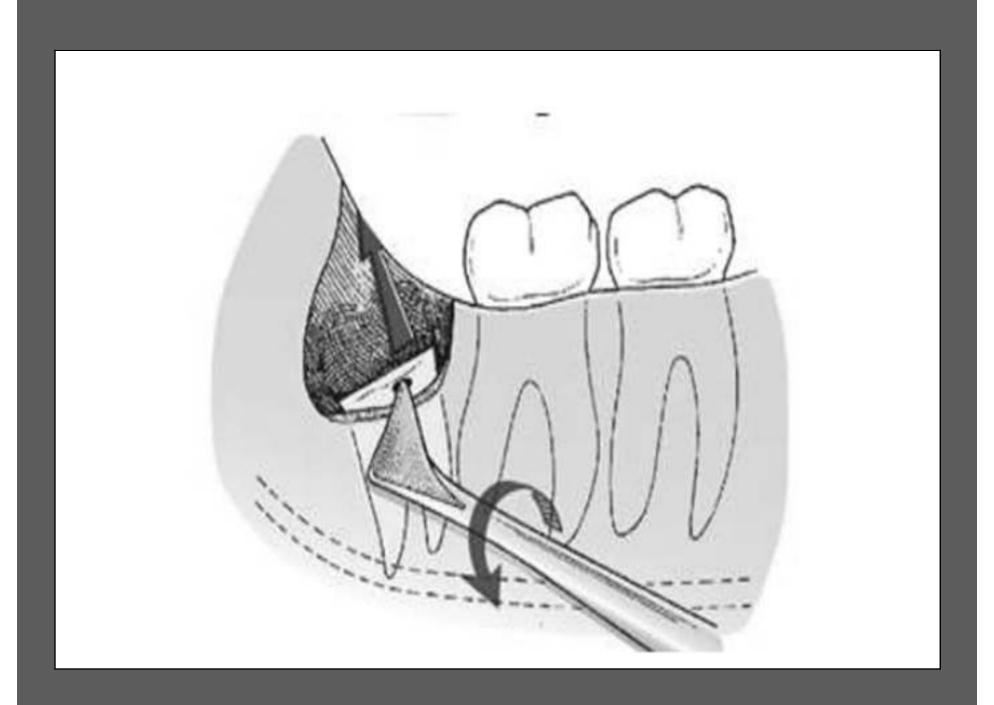
2.The triangle elevators:

- usually provided in pairs.
- Used to enter an empty socket and displace a remaining root from adjacent socket.
- Removes parts of the socket septum.
- It is also used for displacing impacted third molar from the socket .
- Application: buccal and socket.





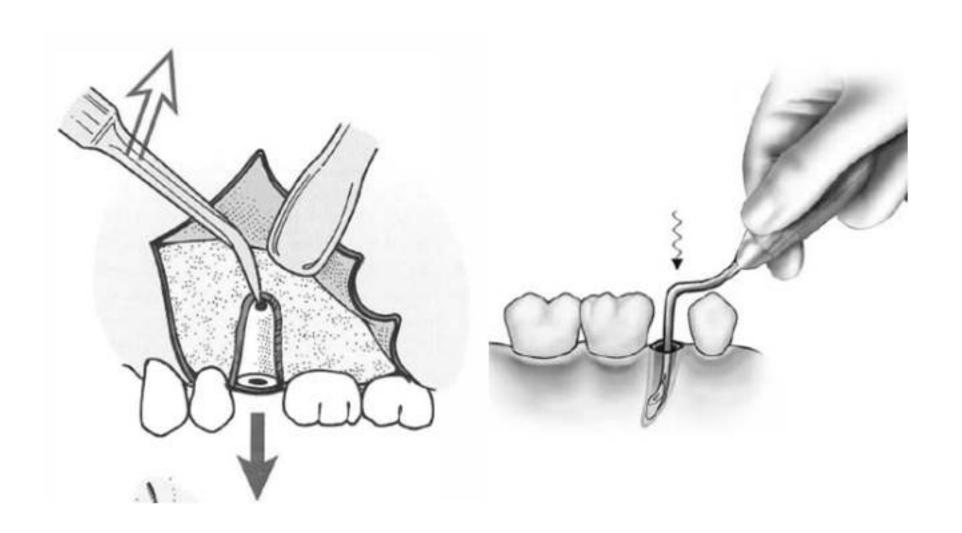




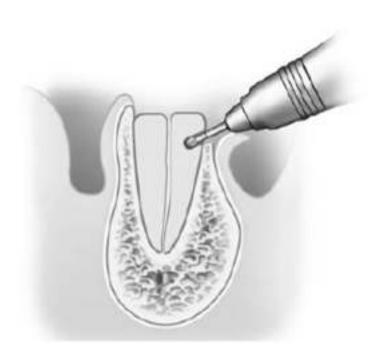
3. The Pick type elevators:

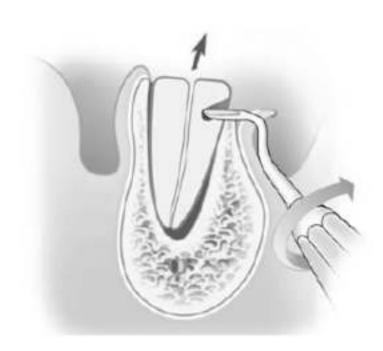
- It is used to remove roots by teasing the small fragments (e.g. root tip pick).
- It is also used for levering the larger root fragment (e.g. Crane pick)





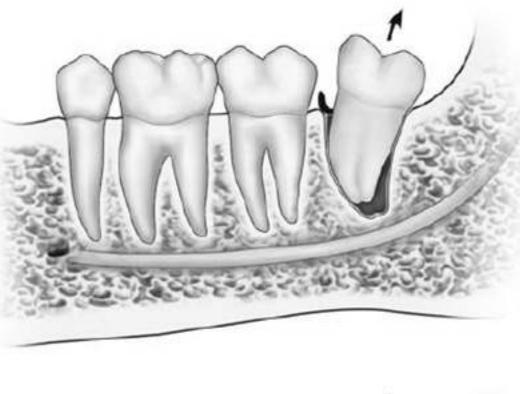
purchase point



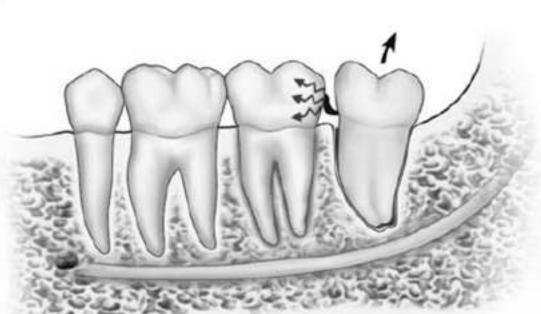




• Never u be extra



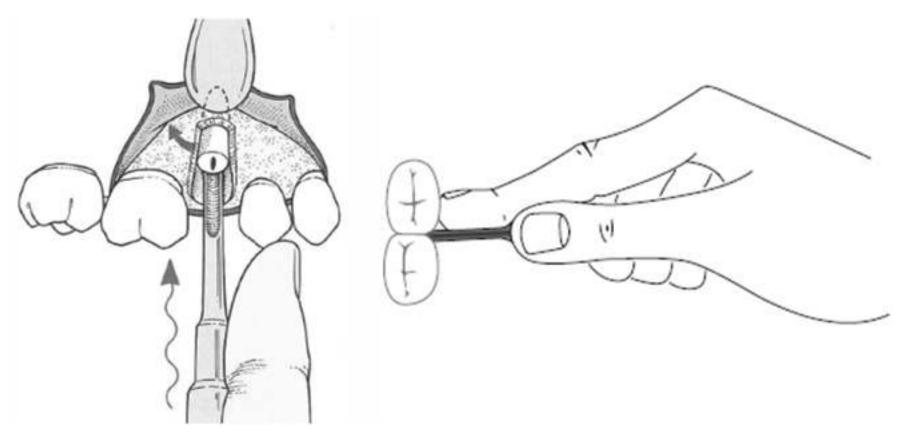
: is to



- Never use buccal plate at the gingival line as fulcrum. (except)
- Never use lingual plate at gingival line as fulcrum.
- Never cross the midline.



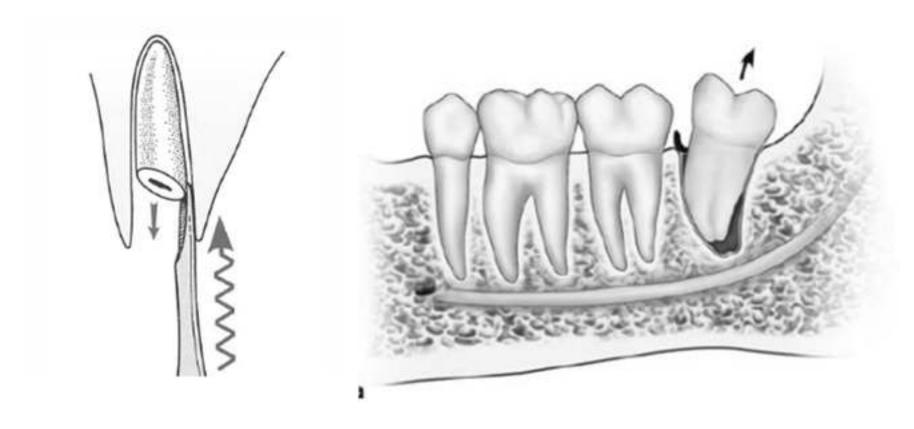
Always use finger guards for protection against slipping



• Controlled forces and pressure exerted in the correct direction



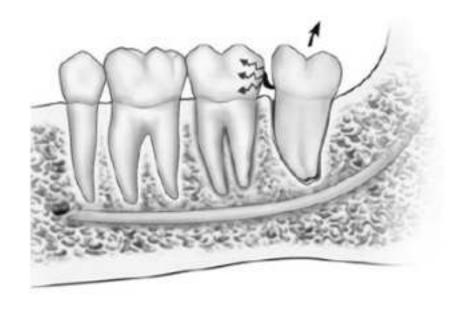
 Concave/flat surface of the elevator faces the tooth/root to be elevated



Dangers in the use of elevators

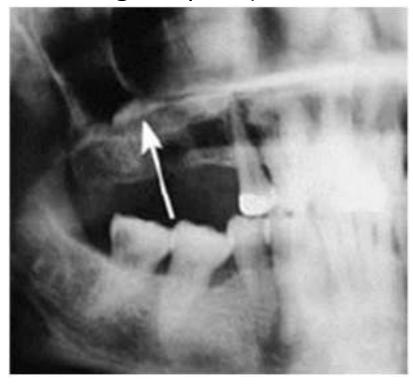
- 1. It may cause loosening of the adjacent teeth.
- 2. It may fracture the alveolar process.

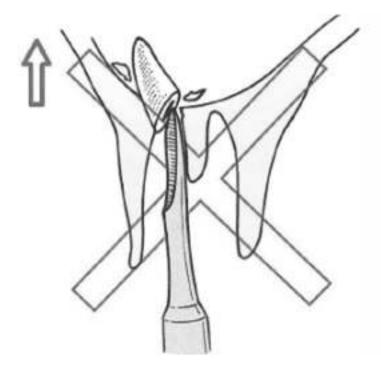




Dangers in the use of elevators

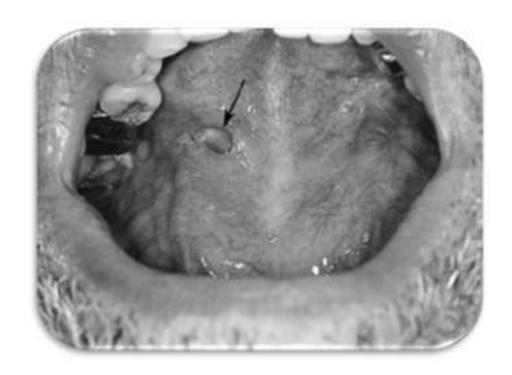
• 3. It may lead to displacement of a tooth or root into undesirable places (maxillary sinus, mandibular canal, or sublingual space).





Dangers in the use of elevators

• 4. It may damage the soft tissues (tongue, lip, cheek, palate, pharynx or floor of the mouth) or vital structure (lingual N.) by slippage of the elevator.



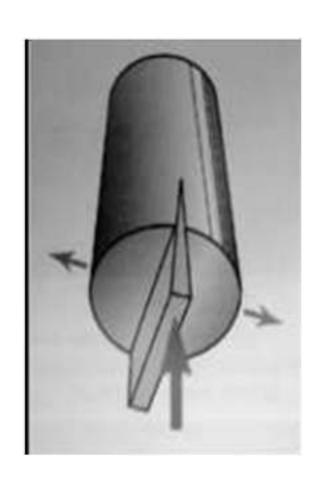
Principles of Elevators

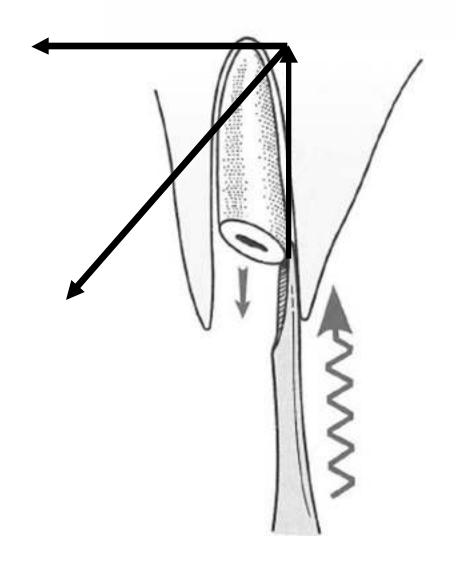
Wedge

Lever

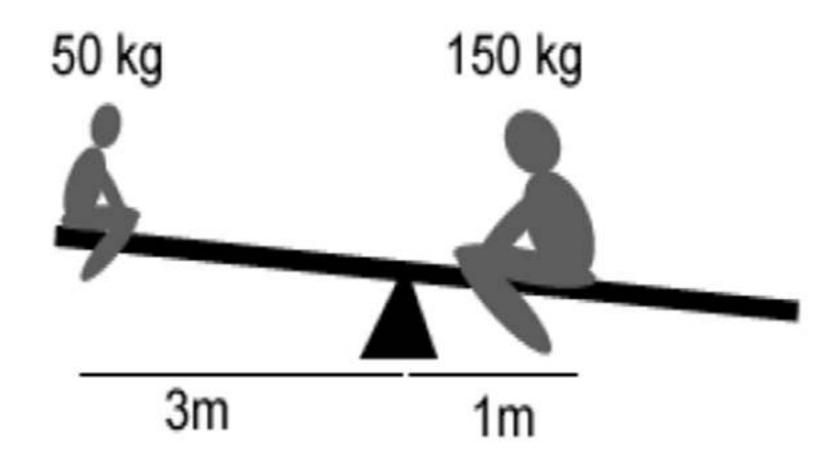
Wheel and Axle

Wedge

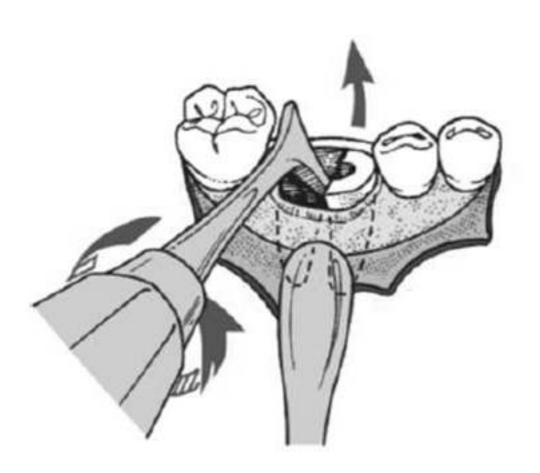


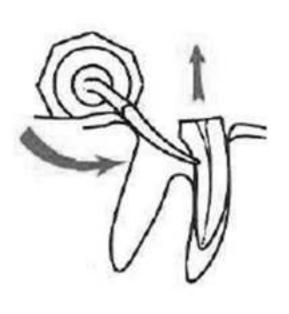


Lever



Wheel and Axle





Elevator Review



Coupland's elevator



London pattern



Miller Elevator

- Wheel and axle
- Luxation of Maxillary thirds molars
- Place at MB of third molar below HOC and roll to the distal.



Potts Elevator

- Wheel and axle
- Luxation of Maxillary third molars



Warwick James





Apexo elevator

• Used for luxation of single remaining roots fractured at any level by wedging action from mesiobuccal and distobuccal angles.

Pick-type Elevators





Cryer Elevator

- Wheel and axle
- Used for removal of single maxillary or mandibular remaining roots and interseptal bone when there is adjacent empty socket
- It has sharp tip i.e. no purchase point
- Can be used to remove mandibular 2nd or 3rd molars or RR by buccal application



Cross bar (buccal or socket applicator)



Crane Pick

- Wheel and axle
- Fulcrum on buccal bone
- Usually needs purchase point
- Roll the root out

SOM OIC

